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Nolan

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(54) **SCENT TRAINING DEVICE**

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(51) **Int. Cl.**
A01K 15/02 (2006.01)
A01K 5/01 (2006.01)

(52) **U.S. Cl.**
CPC ***A01K 15/02*** (2013.01); ***A01K 5/0114*** (2013.01)

(58) **Field of Classification Search**
CPC A01K 5/0114; A01K 15/02
USPC 119/417, 420, 421, 61.5, 712, 174, 905; 73/23.34; 43/124, 132.1, 138
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,561,594 A * 7/1951 Pokras A47G 19/025 220/575
6,314,911 B1 * 11/2001 Kaytovich A01K 5/0114 119/61.5
7,191,560 B2 * 3/2007 Harris A01M 1/02 43/107
7,207,291 B1 * 4/2007 Watts A01K 5/0114 119/61.5
7,856,944 B1 * 12/2010 Stauffer A01K 5/0114 119/61.5
8,776,731 B1 * 7/2014 Curtis A01K 15/02 119/712
2002/0185073 A1 * 12/2002 Fullerton A01K 5/01 119/51.01
2005/0224003 A1 * 10/2005 Yin A01K 5/0275 119/61.5
2006/0137241 A1 * 6/2006 Yamasaki A01M 1/2033 43/125
2006/0231039 A1 * 10/2006 Abinanti A01K 5/0135 119/61.56
2009/0038555 A1 * 2/2009 Reese A01K 15/02 119/174
2009/0044755 A1 * 2/2009 Volotzky A01K 5/0135 119/61.54
2012/0132144 A1 * 5/2012 Parks A01K 5/0114 119/51.5

(Continued)

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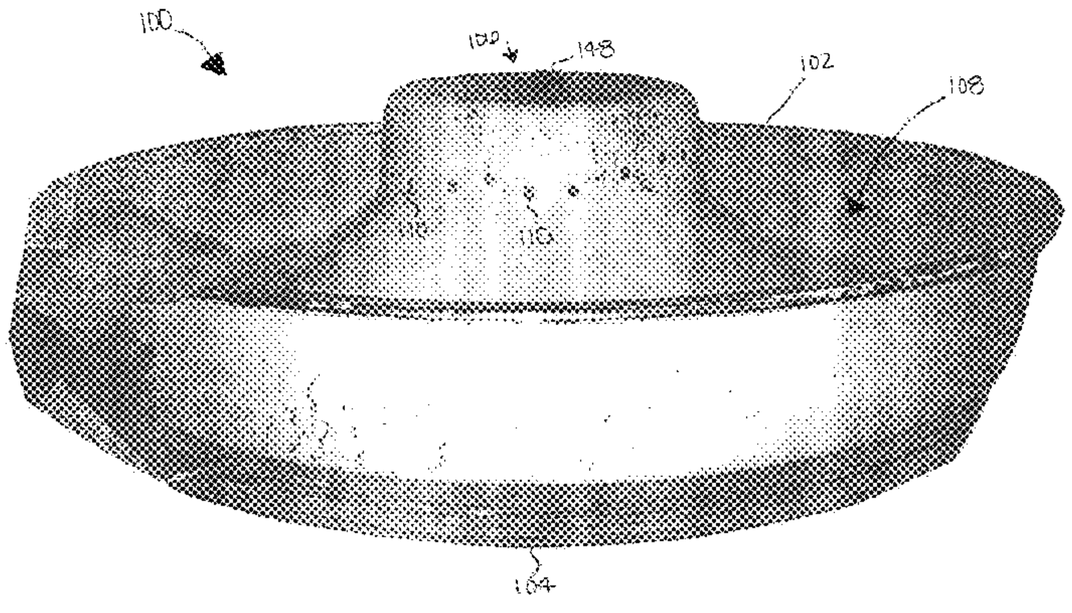
(57) **ABSTRACT**

A device for training animals such as rats, dogs, etc. to recognize and associate target odors/scents with food. The training device, sometimes referred to herein as an odor or scent training device, includes a feeding dish/pan that is configured to have food positioned therein. The scent training device creates a scent curtain of a target scent above the food so that the animal's nose and head first penetrate the scent curtain before the animal can eat the food. As such, each time the animal reaches for more food in the feeding dish, an association between the reward of food and the target scent is strengthened.

20 Claims, 8 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

2012/0210942	A1*	8/2012	Wacker	A01K 7/06 119/72

* cited by examiner

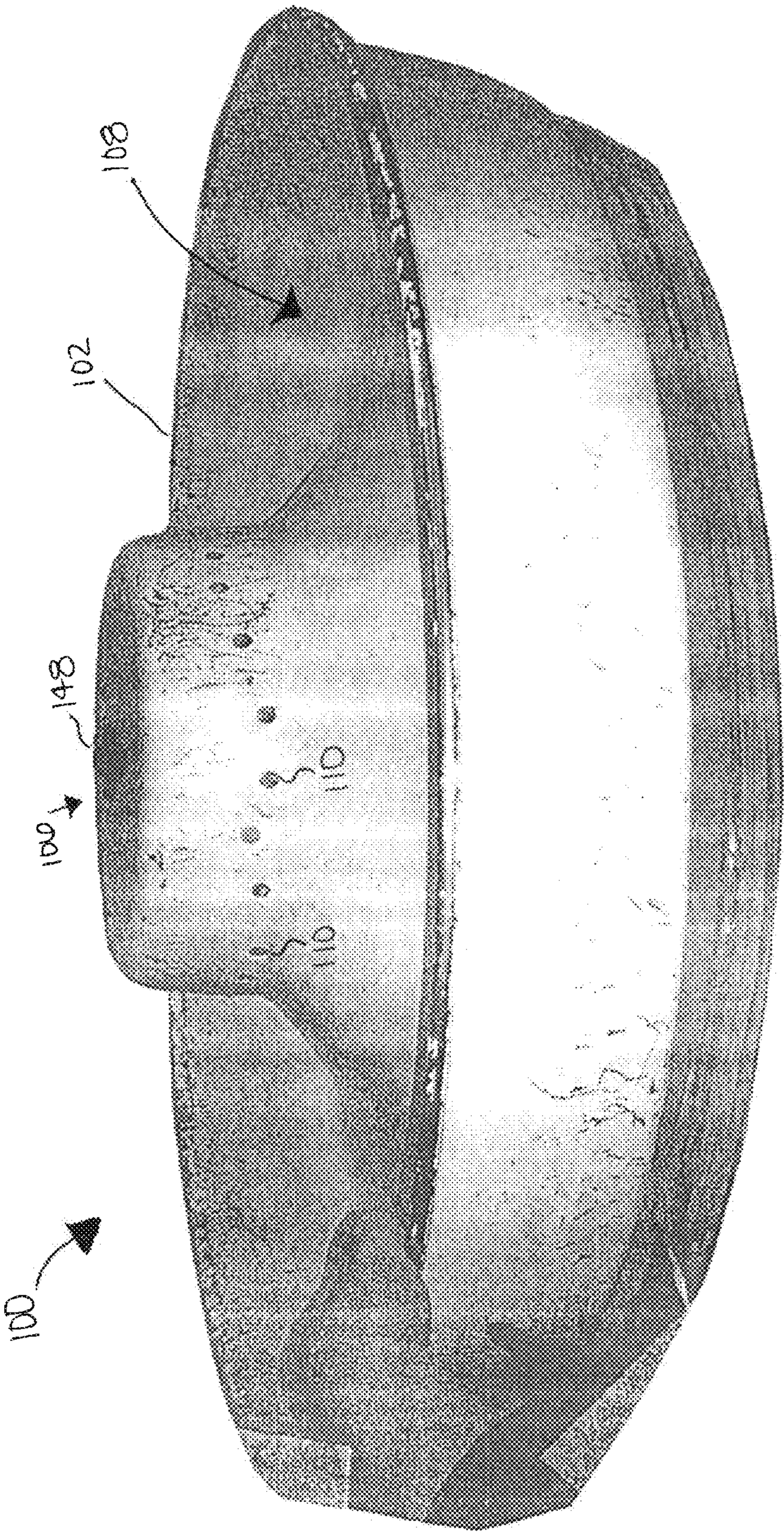


FIG. 1

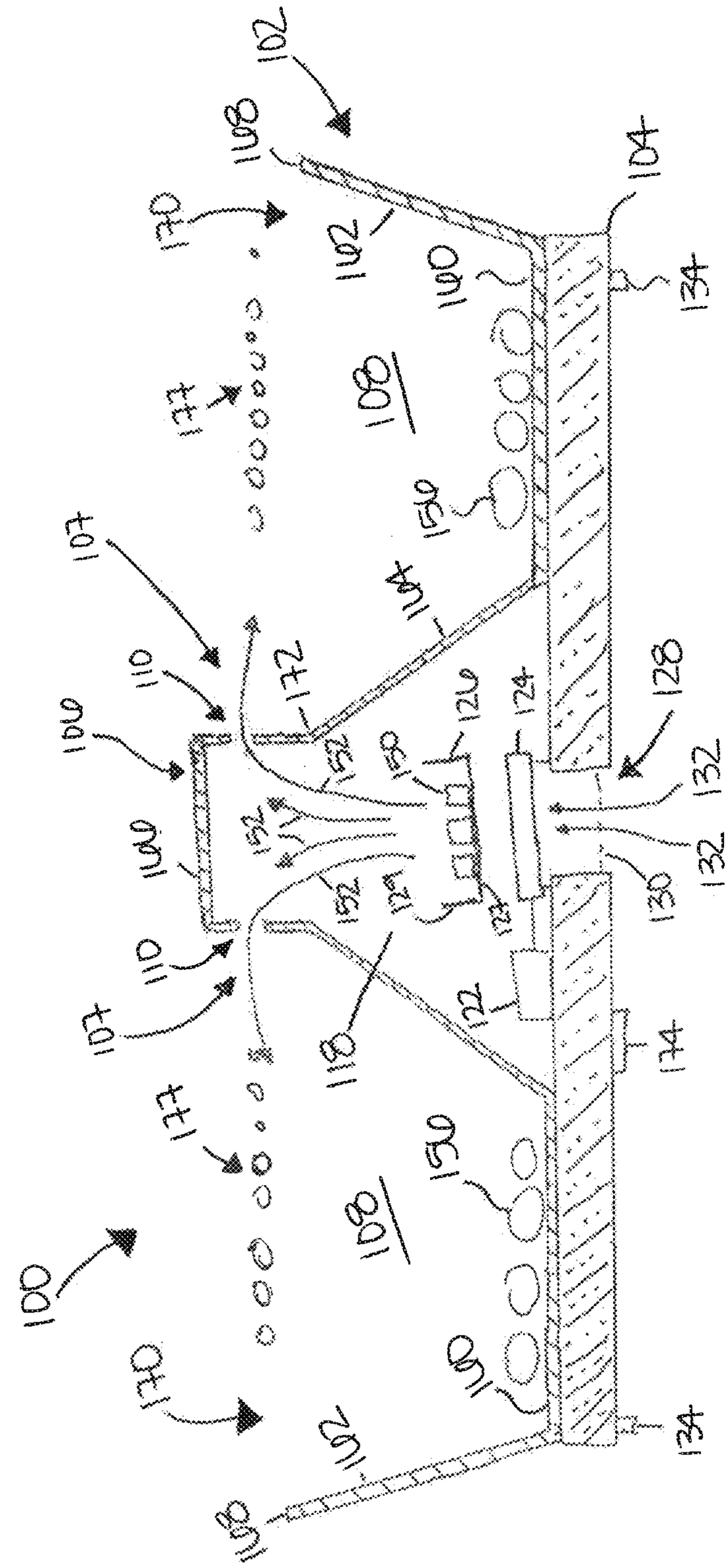

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FIG. 2

FIG. 3

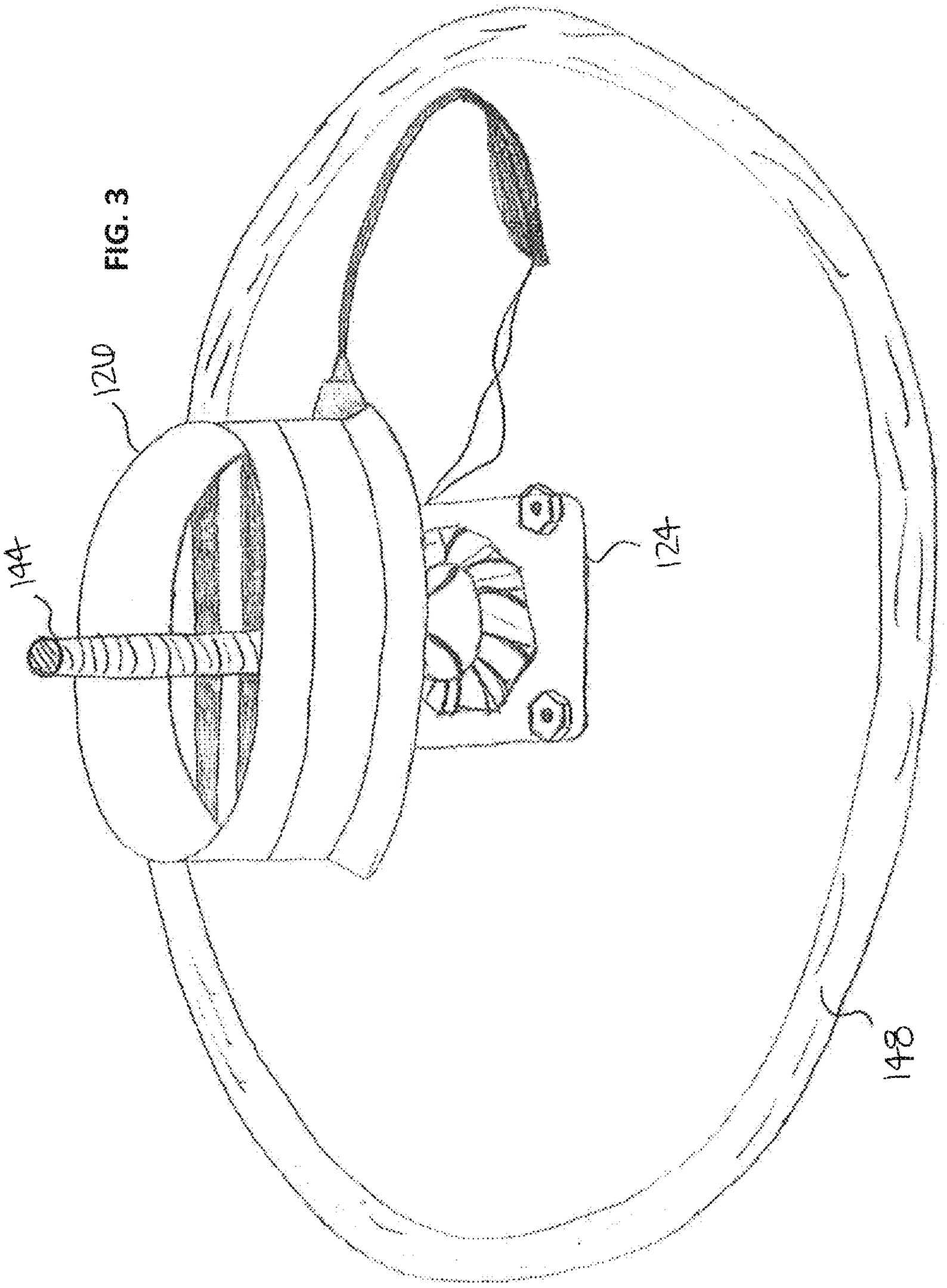


FIG. 4

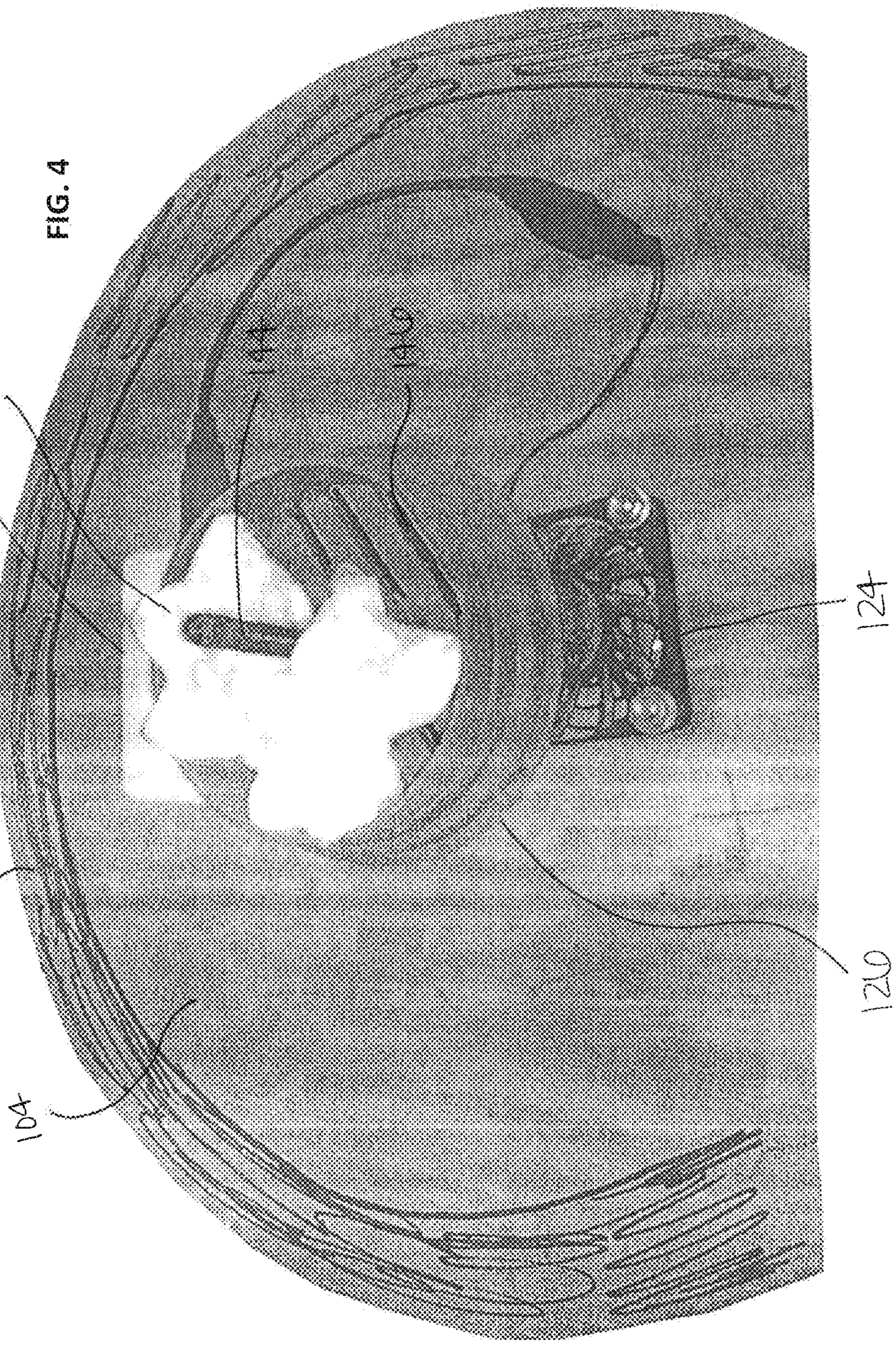


FIG. 5

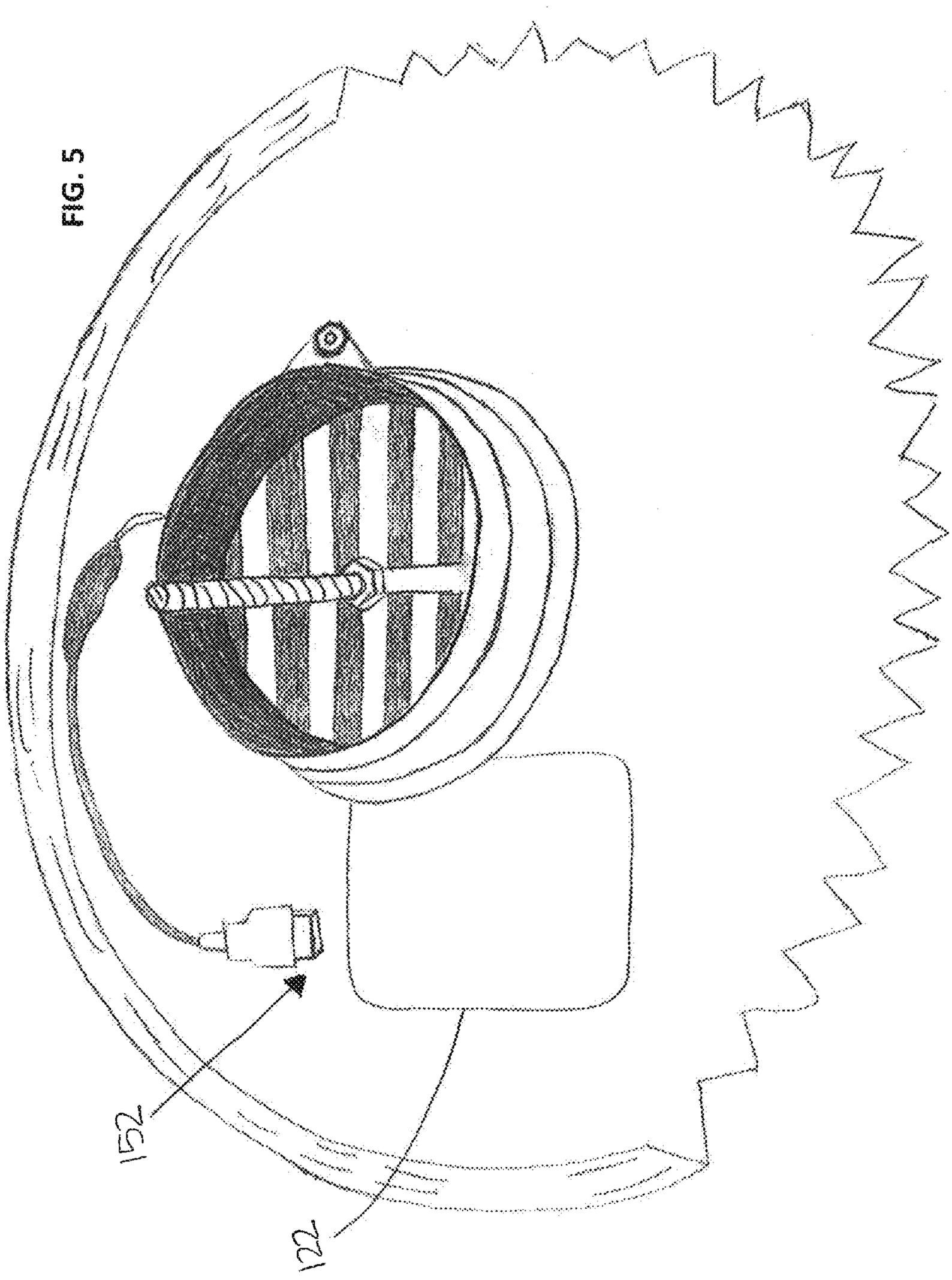
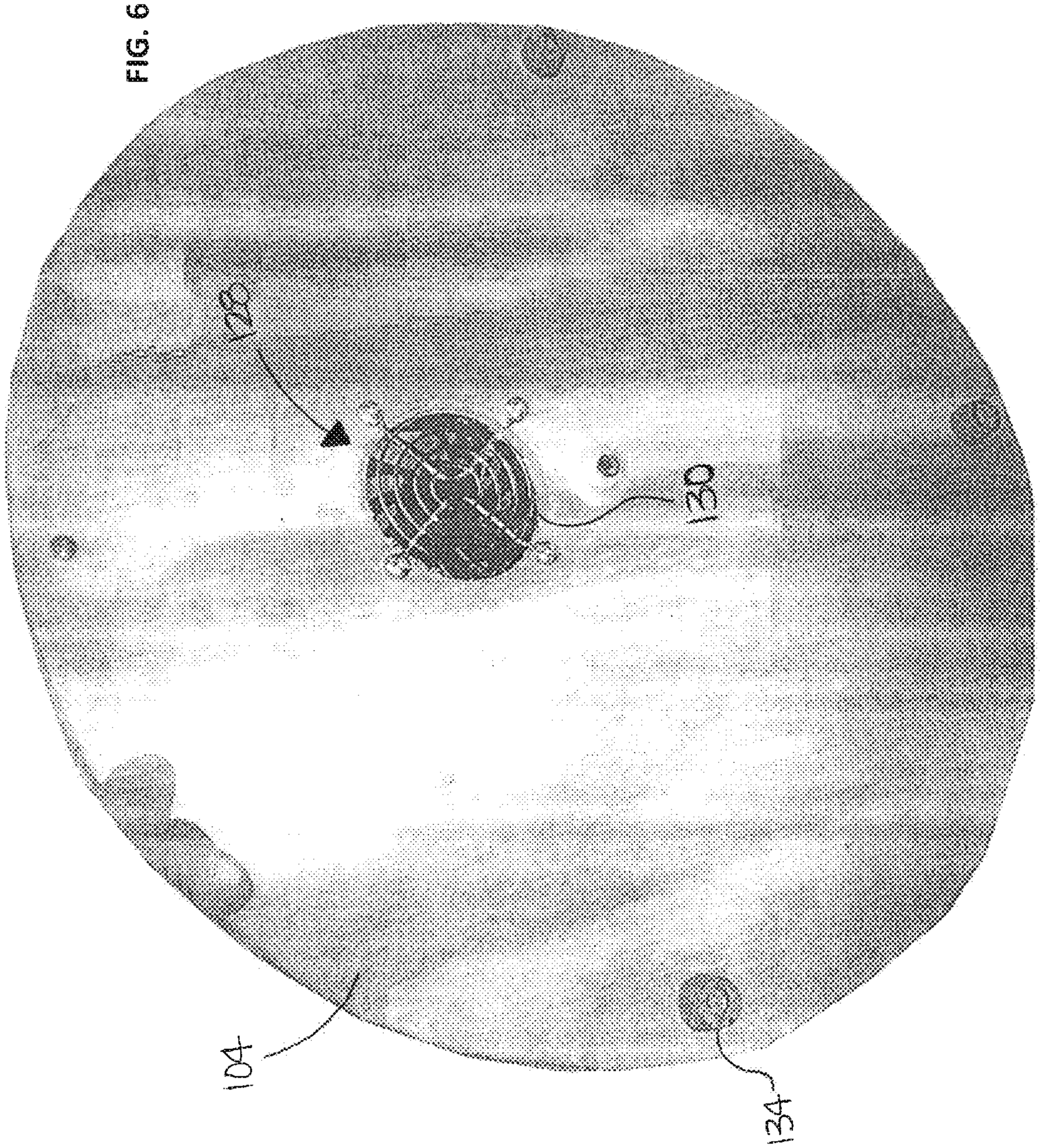


FIG. 6



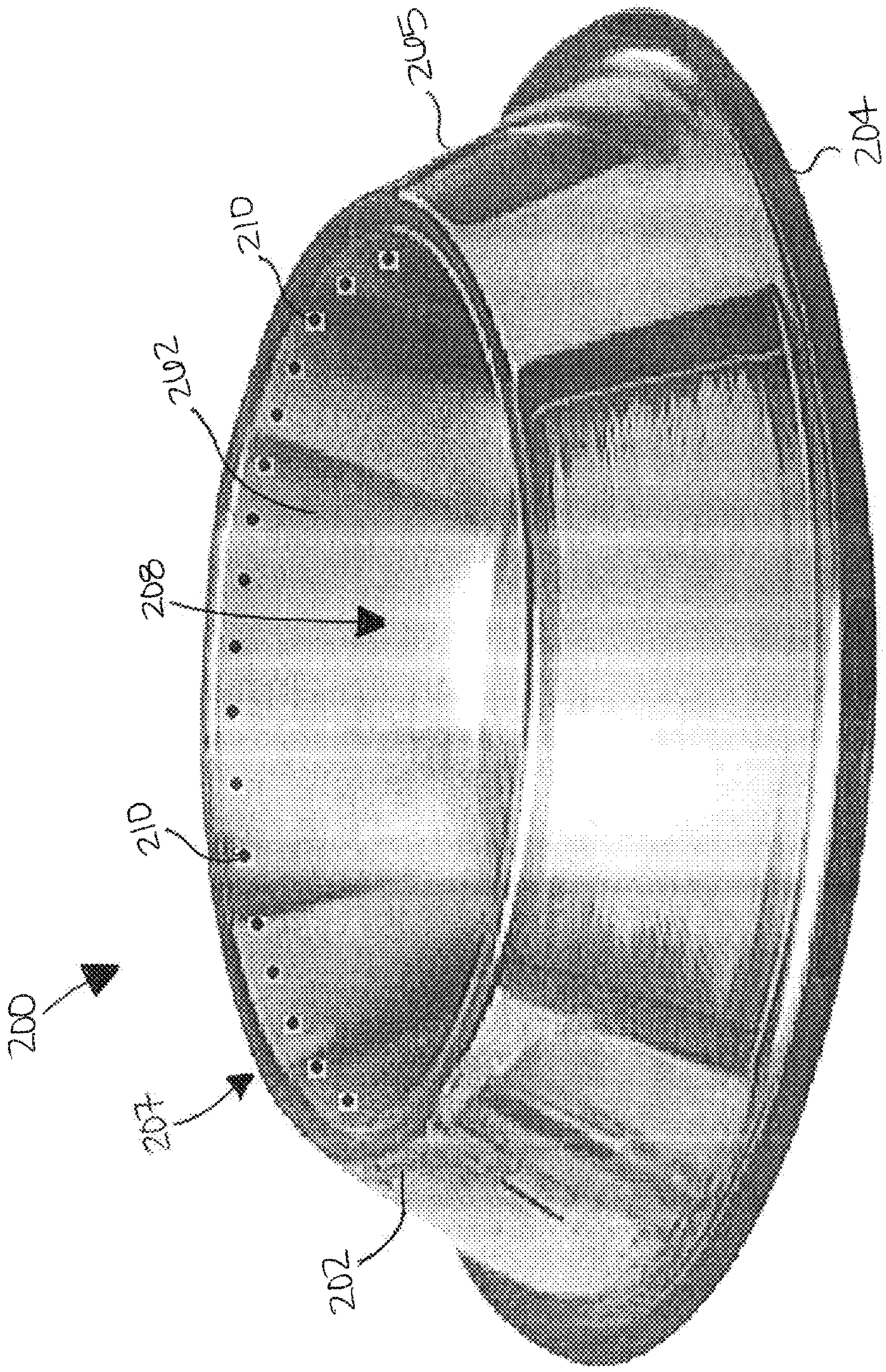


FIG. 7

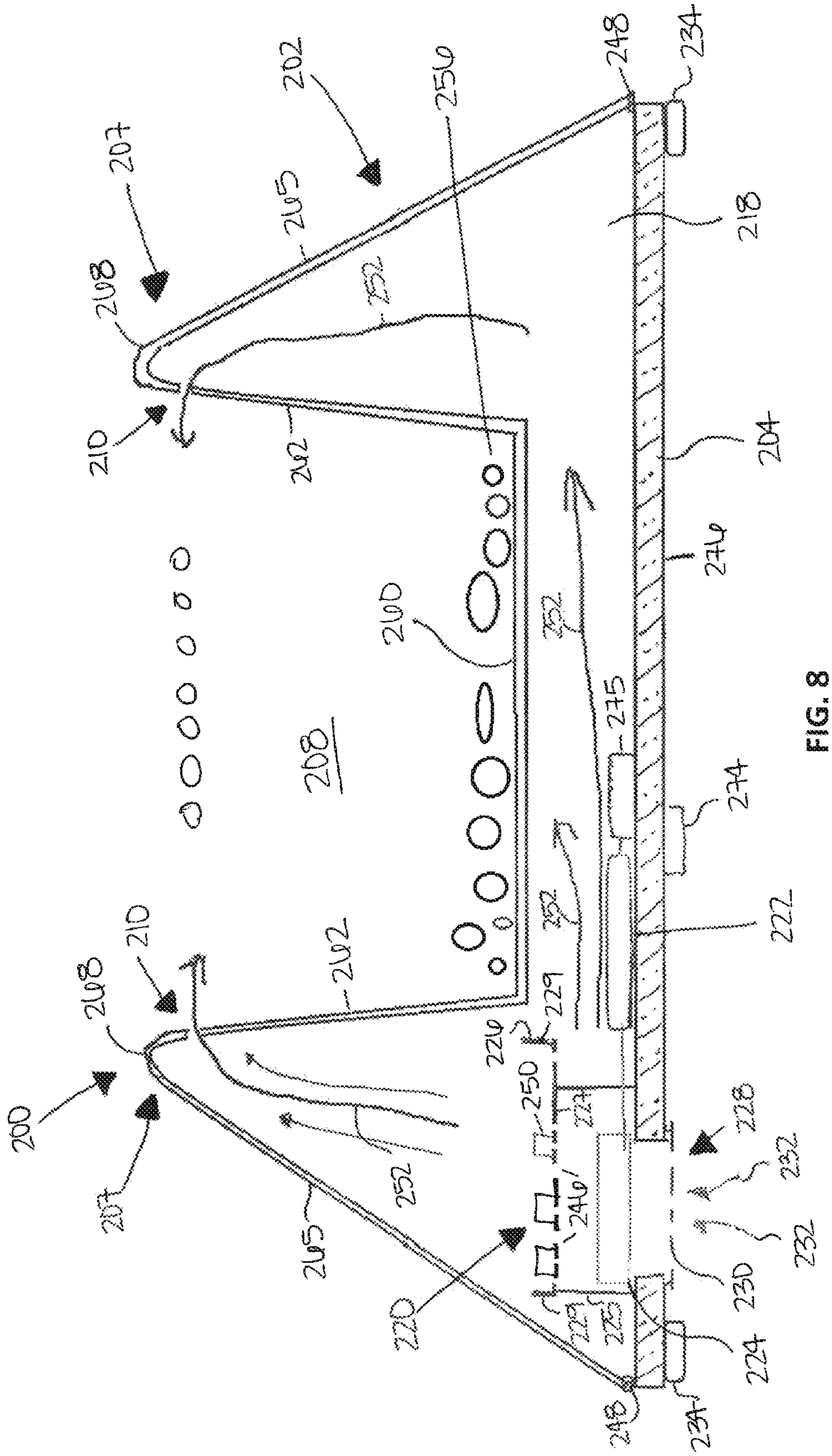

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FIG. 8

SCENT TRAINING DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority to U.S. Provisional Patent Application No. 61/896,280, filed on Oct. 28, 2013, the content of which is hereby incorporated by reference herein.

BACKGROUND

Field of the Invention

The present invention relates generally to an animal training device, and more particularly, to a scent training device.

Related Art

The most formative time in a dog's life is the early puppy period before the age of approximately twelve (12) weeks. However, most dog trainers do not train at this early age and instead generally wait until a dog matures. For example, detection dogs, which are dogs that are trained to use their sense of smell to detect target items (e.g., explosives, illegal drugs, certain foods, blood, etc.), are generally only scent trained after the dogs reach adulthood. Most scent training methods/approaches used for adult dogs are not suitable for early imprinting and training of puppies.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the present invention are described herein in conjunction with the accompanying drawings, in which:

FIG. **1** illustrates a perspective view of a scent training device in accordance with embodiments presented herein;

FIG. **2** illustrates a cross-sectional view of a scent training device;

FIG. **3** illustrates a perspective view of a scent distribution module of a scent training device in accordance with embodiments presented herein;

FIG. **4** illustrates a general top view of a scent distribution module in accordance with embodiments presented herein;

FIG. **5** illustrates a perspective view of a power source of a scent training device in accordance with embodiments presented herein;

FIG. **6** illustrates a general bottom view of a scent training device in accordance with embodiments presented herein.

FIG. **7** illustrates a perspective view of a scent training device in accordance with embodiments presented herein; and

FIG. **8** illustrates a cross-sectional view of a scent training device.

DETAILED DESCRIPTION

Embodiments presented herein are generally directed to a device for scent training animals such as rats, pigs, dogs, etc. to recognize and associate target odors/scents with food items (e.g., animal food, treats, etc.), simply referred to herein as "food." The training device, sometimes referred to herein as an odor or scent training device, includes a feeding dish/pan that is configured to have food positioned therein. The scent training device creates a scent "curtain" or "pool" of a target scent (i.e., target scent molecules) above the food so that the animal's nose and head must first penetrate the scent curtain before the animal can eat the food. As such,

each time the animal reaches for more food in the feeding dish, an association between the reward of food and the target scent is strengthened.

The scent training device presented herein may be useful in training detection dogs to detect target scents, such as scents associated with drugs, explosives, biological substances, chemical substances, etc. The scent training device may be useful in starting the training of puppies at an early age (e.g., as early as three (3) weeks of age) or for imprinting older dogs on novel odors and for ongoing training to strengthen and maintain the target scent/reward. As described further below, the actual scent imprinting enabled by the scent training device takes place without any input from the user/operator. That is, there is no requirement for a user of the scent training device to have special animal 'training skills" or expert timing to build an association between a target scent and a reward.

For ease of illustration, the scent training device is primarily described herein with reference to the training of dogs. However, it is to be appreciated that these examples are merely illustrative and that the scent training device may also be used for the scent imprinting of a number of other animals (e.g., rats, pigs, etc.).

FIG. **1** illustrates a perspective view of a scent training device **100** in accordance with embodiments presented herein. The scent training device **100** is a dog feeding station that comprises an upper section **102** that is sometimes referred to herein as feeding dish/pan **102**. The scent training device **100** also includes a lower section **104** that is sometimes referred to herein as base member **104**. The feeding dish **102** and base member **104** may each be formed from a number of different materials (e.g., stainless steel, plastic, etc.).

The feeding dish **102** has a generally circular shape and comprises an elevated section **107** forming an upper part of a raised central member **106**. The raised central member **106** is surrounded by a feeding trough **108**. Openings (apertures) **110** are disposed around the elevated section **107** and, as described further below, are used to generate a scent curtain above the trough **108**.

The base member **104** has a general disc shape with a diameter that is substantially the same as the bottom diameter of feeding dish **102**. As described further below, the base member **104** may be configured to detachably mate with (i.e., to be detachedly secured to) the feeding dish **102**.

It is to be appreciated that the circular feeding dish **102** and disc shaped base member **104** are merely illustrative and other shapes for the feeding dish and base member are possible in alternative embodiments. For example, the feeding dish and base member may have corresponding oval, square, rectangular, or other shapes. Additionally, as described further below, in alternative embodiments the elevated section may not be a central portion, but instead may be located at a side or end of the feeding dish.

FIG. **2** is a cross-sectional view illustrating further details of the scent training device **100** of FIG. **1**. As shown in FIG. **2**, the feeding dish **102** and base member **104** collectively define a cavity or internal chamber **118** in which a scent distribution module **120** is disposed. That is, the base member **104** is configured to be positioned adjacent to the feeding dish **102** to define an internal chamber **118** between the feeding dish and the base member. FIG. **3** illustrates a perspective view of the scent distribution module **120** and a portion of base member **104**, while FIG. **4** illustrates a general top view of the scent distribution module **120**.

As noted above, the feeding dish **102** includes a bottom surface **160** and an outer sidewall **162**. The feeding dish **102**

also includes the raised central member **106** that is positioned substantially in the center of the feeding dish. The raised central member **106** is formed by an inner sidewall **164** and a top cap **166**. The inner sidewall **164**, bottom surface **160**, and the outer sidewall **263** define the trough **108** that is configured to have a food item, such as dog food **156**, positioned therein. The trough **108**, which in this example has a general torus or ring shape, has sufficient dimensions (e.g., width, depth, etc.) to retain the dog food **156** and such that the openings **110** in the raised central member **106** are "above" the dog food **156**. As used herein, reference to a element of the scent training device **100** as positioned "above" or "below" another element of the scent training device **100** refers to a relative position of the two elements when the scent training device **100** is in use such that the base member **104** is proximate to a support surface (e.g., the ground, floor, etc.).

As shown in FIG. **2**, an outer edge or end **168** of the sidewall **162** defines the outer perimeter of an access opening **170** through which a dog may insert his/her head to reach the dog food **156** positioned in trough **108**. The access opening **170** has a general torus or ring shape with an inner diameter defined by an end **172** of the inner sidewall **164**.

As noted above, the scent distribution module **120** is positioned in the internal chamber **118** defined by feeding dish **102** and base member **104**. In the specific example shown in FIG. **2**, the internal chamber **118** is primarily positioned in raised central member **106**. As described further below, other locations for an internal chamber are possible.

The scent distribution module **120** comprises a power source **122**, a fan **124**, and a scent tray **126**. The fan **124** is mounted over an air intake opening **128** in the base member **104**. A filter or screen **130** is disposed across the air intake opening **128**. FIG. **6** is a general bottom view of the base member **104**, illustrating the air intake opening **128** and the screen **130**.

In certain embodiments, a center post (rod) **144** (shown in FIGS. **3** and **4**) extends from the base member **104** to an opening (not shown) at the top of the raised central portion **106**. The feeding dish **102** may be attached to the base member **102** via a nut **145** (FIG. **1**) secured to the top of the center post **144**. For ease of illustration, the center post **144** has been omitted from FIG. **2**.

Although FIG. **2** illustrates the feeding dish **102** attached to the base member **102** via a rod **144** and nut **145**, it is to be appreciated that mechanisms may be used to detachable secure the base member **104** to the feeding dish **102**. Other attachment mechanisms that may be used include, for example, clips, corresponding/mating screw threads in each of base member **104** to the feeding dish **102**, hook and loop (e.g., Velcro) fasteners, etc.

The fan **124** may be, for example, an electric fan that is powered by the power source **122**. The power source **122** may be, for example, a rechargeable and/or removable battery or battery pack. FIG. **5** illustrates a perspective view of an exemplary battery pack **122** that may be used in accordance with embodiments of the present invention. In the embodiment of FIG. **5**, the battery pack **122** includes a Universal Serial Bus (USB) interface for connection to a USB connector **152** extending from the fan **124**.

In alternative embodiments, the power source **122** may comprise an alternating current (AC) to direct current (DC) (AC/DC) converter connected to a power cord (not shown) so that the scent training device **100** may be connected to an AC power outlet. In further embodiments, the power source **122** may provide the ability to power the fan **124** using either rechargeable batteries/battery pack or an AC power outlet. In certain embodiments, the power source **122** may be attached to the base member **104** using, for example, a hook and loop fastener.

As shown in FIG. **3**, the scent tray **126** is mounted over the fan **124** and attached to center post **144**. The scent tray **126** is a ventilated tray that comprises a bottom surface **127** having a plurality of apertures **146** (shown in FIG. **4**) disposed therein. The scent tray **126** may also comprise one or more side surfaces **129** so as to retain a target scent source material within the scent tray.

In operation, feeding dish **102** and base member **104** are separated (i.e., detached from one another) so that a user/operator of the scent training device **100** may place target scent source material **150** into the scent tray **126**. Once the scent source material **150** is positioned into the scent tray **126**, the feeding dish **102** and base member **104** may be re-attached to one another.

The target scent source material **150** may comprise any material that provides or replicates a scent that the user would like a dog to eventually learn to detect. In general, the target scent source material **150** is configured to release/emit airborne scent molecules into the vicinity of the scent tray **126**. The material may be any material that gives off a target scent/odor that an animal can perceive. The target scent given off by the material may include, for example, narcotic scents, explosives scents, chemical and biological agent scents, currency scents, foodstuff scents, insect scents, cancer cell scents, etc.

The scent training device **100** may comprise an "on/off" switch **174** that, when pressed by a user, activates/deactivates the fan **124** (e.g., causes power source **122** to provide port to fan **124**). Alternatively, the scent training device **100** may include a module (not shown in FIG. **2**) that is configured to wirelessly communicate with a remote control (also not shown in FIG. **2**) that enables a user to remotely turn the fan on/off (i.e., a wireless module responsive to remote control commands).

An illustrative location for the on/off switch **174** on the outer surface **176** of the base member **104** is shown in FIG. **2**. Other locations for the on/off switch **174** are possible in other embodiments.

In general, the fan **124** is positioned in proximity to the scent tray **126** so as to force air through the scent tray and out of the internal chamber **118** through the openings **110** in the elevated section **107**. More specifically, when activated (i.e., turned on), the fan **124** is configured to draw air into the internal chamber **118** through the air intake opening **128** and force the air drawn through air intake opening through the scent tray **126**. The flow of air into internal chamber **118** (caused by fan **124**) is shown in FIG. **2** by arrows **132**. The base member **104** includes a plurality of support legs (feet) **134** that separate the base member **104** from a support surface (e.g., floor, ground, etc.) to enable the flow of air beneath the base member **104**, thereby facilitating unrestricted air intake.

When the air **132** is drawn into internal chamber **118**, the air will pass through the fan **124** and is forced through the scent tray **126**. That is, the apertures **146** in the bottom surface **127** of the scent tray **126** allow the air **132** to pass through the scent tray. As the air **132** passes through the scent tray **126**, the air is exposed to the target scent source material **150** placed in the scent tray. As a result of this exposure, the air **132** that passes through (or in the vicinity of) the scent tray **126** will begin to carry the scent molecules released by the target scent source material **150**.

The air that carries the target scent (i.e., the target scent molecules) is represented in FIG. **2** by arrows **152** and is referred to herein as scented air **152**. As shown in FIG. **2**, the scented air **152** exits the internal chamber **118** through the openings **110** in the raised central portion **106**. In certain embodiments, a seal **148** (FIGS. **3** and **4**) is disposed around the perimeter of the base member **104** between the base member **104** and the feeding dish **102**. This seal **148** may aid in preventing the scented air **152** from escaping from between the base member **104** and feeding dish **102**, thereby facilitating the flow of the scented air **152** out of the openings **110**. In certain embodiments, the fan **124** and seal **148** operate to create a pressure differential between the internal chamber **118** and the outside environment (e.g., the air in trough **108**). This pressure differential may help force the scented air **152** out through the openings **110**. In such embodiments, the internal chamber **118** is sometimes referred to herein as a pressurized scent chamber.

As noted above, the scented air **152** exits the internal chamber **118** through the openings **110** in raised central member **106**. Also as noted above, the openings **110** are above the trough **108**. When the scented air **152** exits through openings **118**, the scented air creates a scent "curtain" or "pool" **177** over the food **156** at (e.g., proximate to) the access opening **170** of the feeding dish **102**. That is, the scent distribution module **120** positioned in the internal chamber **118** is configured to force the scented air **152** through the openings **110** to create a distribution of scent molecules in or adjacent to the access opening **170**.

A classical approach to scent training detection dogs (i.e., teaching dogs to search for target scents) is to create an association between a target scent and a reward. An element of this process is that the reward must be provided at the correct time, preferably as soon as possible after the dog detects the target scent. The association between the reward and the target scent teaches a target that, in essence, detection of the target scent will result in a reward. However, failure to provide the reward at the correct time also fails to build the association in the dog's mind between the target scent and the reward. The ability to provide a reward at the correct time requires a skilled trainer that recognizes, through body language or other cues, that a dog has detected the target scent and requires the trainer to immediately provide the reward to the dog. As such, scent training may be difficult for unskilled or novice trainers.

The scent training device **100** in accordance with embodiments presented herein advantageously creates a condition in which a dog learns to properly associate a reward with a target scent. More specifically, due to the location of the scent curtain **177** at the access opening **170** (e.g., resulting from the openings **110** in the elevated section of the feeding dish proximate to the access opening), a dog's head must first penetrate the scent curtain **177** before the dog can eat the food **156**. In other words, the dog's nose passes through the scent curtain **177** so that the dog detects the target scent. Immediately after passing through the scent curtain **177**, the dog reaches the food **156**, which is interpreted as a reward by the dog. As such, the important timing of the reward immediately following detection of the target scent is provided by the structure of the scent training device **100**. Each time the dog reaches for more food **156** in the feeding dish **102**, the association between the reward of food and the target scent is strengthened.

As noted above, the actual scent training (e.g., imprinting and/or ongoing training) enabled by the scent training device **100** takes place without any input from the trainer. That is, there is no requirement for the user of the scent training device **100** to have special skills to recognize when the dog detects the target scent and immediately provide a reward so as to build the association between a target scent and a reward. Instead, the scent training device **100** exposes the dog to the target scent and the dog is immediately rewarded, thereby building the association between a target scent and a reward without action by the user.

In certain embodiments, a dog that is eating the dog food **156** will smell the scented air **152** and thus is highly exposed to the target scent. In general, the scent training device **100** ensures that the closer to the target scent that a dog is, the closer the dog is to the food source as well. Since the source of the scent is also the food source, the scent training device **100** builds a desire and habit in the dog to follow target scents to the source, which is important for detection dogs.

The scent training device **100** shown in FIGS. **1-6** may be particularly useful for performing target scent "imprinting" (i.e., training a dog to form an association between a target odor and a reward) from the age of approximately three (3) weeks on. For example, the specific shape of scent training device **100** to form a torus trough **108** may enable trainers/breeders to imprint a whole litter of puppies at the same time. Early exposure of puppies to target scents makes long lasting impressions on puppies that are resistant to fading. That is, this early scent imprinting is very deep seated, makes a lasting impression, and offers the ability to begin adult training earlier. Started early, dogs are better at finding smaller amounts of target odor substances, and can begin operational training at an earlier age, thereby extending the dog's working life span.

FIGS. **7** and **8** are perspective and cross-sectional views, respectively, of an alternative scent training device **200** in accordance embodiments presented herein. In certain examples, the scent training device **200** may be useful for imprinting a single animal on novel odors/scents and/or for ongoing training to strengthen and maintain the target odor/reward association in trained animals, including puppy or adult dogs, pigs, rats, etc.

The scent training device **200** is an animal feeding station that comprises an upper section **202** that is sometimes referred to herein as feeding dish/pan **202**. The scent training device **200** also includes a lower section **204** that is sometimes referred to herein as base member **204**. The feeding dish **202** and base member **204** may each be formed from a number of different materials (e.g., stainless steel, plastic, etc.).

The feeding dish **202** includes a bottom surface **260** and an outer sidewall **262** that define a feeding trough **208** that is configured to have a food item, such as animal food **256**, positioned therein. The feeding dish **202** also includes a skirt **265** that is connected to an outer edge or end **268** of the sidewall **262**. An elevated section **207** of the scent training device **200** comprises a portion of the outer sidewall **262** adjacent to the end **268**. Openings (apertures) **210** are disposed in the elevated section **207** and, as described further below, are used to generate a scent curtain above the trough **208**.

The trough **208**, which in this example has a general concave or bowl shape, has sufficient dimensions (e.g., width, depth, etc.) to retain the animal food **256** and such that the openings **210** in the elevated section **207** are "above" the animal food **256**. As used herein, reference to a element of the scent training device **200** as positioned "above" or "below" another element of the scent training device **200** refers to a relative position of the two elements when the

scent training device **200** is in use such that the base member **204** is proximate to a support surface (e.g., the ground, floor, etc.).

In the examples of FIGS. **7** and **8**, the base member **204** has a general disc shape with a diameter that is substantially the same as the bottom diameter of feeding dish **202**. The base member **204** may be configured to detachably mate with (i.e., to be detachedly secured to) the feeding dish **202** in a number of manners. For example, different clip mechanisms, mating screw threads in each piece, hook and loop fasteners, etc. may be used to attach base member **204** to feeding dish **202**.

It is to be appreciated that the circular feeding dish **202** and disc shaped base member **204** are merely illustrative and other shapes for the feeding dish and base member are possible in alternative embodiments. For example, the feeding dish and base member may have corresponding oval, square, rectangular, or other shapes.

As shown in FIG. **8**, the end **268** of the sidewall **262** defines the outer perimeter of an access opening **270** through which an animal may insert his/her head to reach the food **256** positioned in trough **208**. The access opening **270** has a general circular shape.

The feeding dish **202** and base member **204** collectively define a cavity or internal chamber **218** in which a scent distribution module **220** is disposed. That is, the base member **204** is configured to be positioned adjacent to the feeding dish **202** to define an internal chamber **218** between the feeding dish and the base member. As shown in FIG. **8**, the internal chamber **218** has an irregular shape defined by bottom surface **260**, outer sidewall **262**, skirt **265**, and base member **204**.

The scent distribution module **220** comprises a power source **222**, a fan **224**, and a scent tray **226**. The fan **224** is mounted over an air intake opening **228** in the base member **204**. A filter or screen **230** is disposed across the air intake opening **228**. The fan **224** may be, for example, an electric fan that is powered by the power source **222**. The power source **222** may be, for example, a rechargeable and/or removable battery or battery pack. In certain examples, the power source **222** may similar to battery pack **122** shown in FIG. **5** which uses a USB interface for connection to a USB connector extending from the fan **224**.

In alternative embodiments, the power source **222** may comprise an AC/DC converter connected to a power cord (not shown) so that the scent training device **200** may be connected to an AC power outlet. In further embodiments, the power source **222** may provide the ability to power the fan **224** using either rechargeable batteries/battery pack or an AC power outlet. In certain embodiments, the power source **222** may be attached to the base member **204** using, for example, a hook and loop (e.g., Velcro) fastener.

As shown in FIG. **8**, the scent tray **226** is mounted over the fan **224** using, for example, posts **225**. The scent tray **226** is a ventilated tray that comprises a bottom surface **227** having a plurality of apertures **246** disposed therein. The scent tray **226** may also comprise one or more side surfaces **229** that may also include aperatures.

In operation, feeding dish **202** and base member **204** are separated (i.e., detached from one another) so that a user/operator of the scent training device **200** may place target scent source material **250** into the scent tray **226**. Once the scent source material **250** is positioned into the scent tray **226**, the feeding dish **202** and base member **204** may be re-attached to one another.

The target scent source material **250** may comprise any material that provides or replicates a scent that the user would like a dog to eventually learn to detect. In general, the target scent source material **250** is configured to release/emit airborne scent molecules into the vicinity of the scent tray **226**. The material may be any material that gives off a scent/odor that an animal can perceive. The scent given off by the material may include, for example, narcotic scents, explosives scents, chemical and biological agent scents, currency scents, foodstuff scents, insect scents, cancer cell scents, etc.

The scent training device **200** may comprise an "on/off" switch **274** that, when pressed by a user, activates/deactivates the fan **224** (e.g., causes power source **222** to provide port to fan **224**). In addition or alternatively, the scent training device **200** may include a module **275** that is configured to wirelessly communicate with a remote control (not shown in FIG. **8**) that enables a user to remotely turn the fan on/off.

An illustrative location for the on/off switch **274** on the outer surface **276** of the base member **204** is shown in FIG. **8**. Other locations for the on/off switch **274** and/or for module **275** are possible in other embodiments.

FIG. **8** illustrates one illustrative location for scent distribution module **220**, namely substantially in an area of the internal chamber **218** defined by skirt **265** and outer sidewall **262**. It is to be appreciated that this location is merely illustrative and the scent distribution module **220** may be positioned, for example, substantially below the bottom surface **260**. The air intake opening **228** may accordingly be moved for positioning in proximity to the scent distribution module **220**.

Returning to the example of FIG. **8**, the fan **224** is positioned in proximity to the scent tray **226** so as to force air through the scent tray and out of the internal chamber **218** through the openings **210** in the elevated section **207**. More specifically, when activated (i.e., turned on), the fan **224** is configured to draw air into the internal chamber **218** through the air intake opening **228** and force the air drawn through air intake opening through the scent tray **226**. The flow of air into internal chamber **218** (caused by fan **224**) is shown in FIG. **2** by arrows **232**. The base member **204** includes a plurality of support legs (feet) **234** that separate the base member **204** from a support surface (e.g., floor, ground, etc.) to enable the flow of air beneath the base member **204**, thereby facilitating unrestricted air intake.

When the air **232** is drawn into internal chamber **218**, the air will pass through the fan **224** and will be forced through the scent tray **226**. The apertures **246** in the bottom surface **227** of the scent tray **226** allow the air **232** to pass through the scent tray. As the air **232** passes through the scent tray **226**, the air is exposed to the target scent source material **250** placed in the scent tray. As a result of this exposure, the air **232** that passes through (or in the vicinity of) the scent tray **226** will begin to carry the scent molecules released by the target scent source material **250**.

The air that carries the scent molecules is represented in FIG. **8** by arrows **252** and is referred to herein as scented air **252**. As shown, the scented air **252** exits the internal chamber **218** through the openings **210** in the elevated section **207**. In certain embodiments, a seal **248** is disposed around the perimeter of the base member **204** between the base member **204** and the feeding dish **202**. This seal **248** may aid in preventing the scented air **252** from escaping from between the base member **204** and feeding dish **202**, thereby facilitating the flow of the scented air **252** out of the openings **210**. In certain embodiments, the fan **224** and seal **248** operate to create a pressure differential between the internal chamber **218** and the outside environment (e.g., the

air in trough **208**). This pressure differential may help force the scented air **252** out through the openings **210**. In such embodiments, the internal chamber **218** is sometimes referred to herein as a pressurized scent chamber.

As noted above, the scented air **252** exits the internal chamber **218** through the openings **210** in elevated section **207**. Also as noted above, the openings **210** are above the trough **208**. When the scented air **252** exits through openings **218**, the scented air creates a scent curtain **277** over the food **256** at (e.g., proximate to) the access opening **270** of the feeding dish **202**. That is, the scent distribution module **220** positioned in the internal chamber **218** is configured to force the scented air **252** through the openings **210** to create a distribution of scent molecules in or adjacent to the access opening **270**.

As noted above, a classical approach to scent training detection dogs or other animals is to create an association between a target scent and a reward by rewarding the animal as soon as possible after the animal detects the target scent. The scent training device **200** in accordance with embodiments presented herein advantageously creates a condition in which an animal is timely rewarded after exposure to a target scent. More specifically, due to the location of the scent curtain **277** at the access opening **270** (e.g., resulting from the openings **210** in the elevated section **207** of the feeding dish proximate to the access opening), an animal's head must first penetrate the scent curtain **277** before the animal can eat the food **256**. In other words, the animal's nose passes through the scent curtain **277** so that the animal detects the target scent. Immediately after passing through the scent curtain **277**, the animal reaches the food **256**, which is interpreted as a reward by the animal. As such, the important timing of the reward immediately following detection of the target scent is provided by the structure of the scent training device **200**. Each time the animal reaches for more food **256** in the feeding dish **202**, the association between the reward of food and the target scent is strengthened.

The actual scent training (e.g., imprinting and/or ongoing training) enabled by the scent training device **200** takes place without any input from the trainer. That is, there is no requirement for the user of the scent training device **200** to have special skills to recognize when the animal detects the target scent and immediately provide a reward so as to build the association between a target scent and a reward. Instead, the scent training device **200** exposes the animal to the target scent and the animal is immediately rewarded, thereby building the association between a target scent and a reward without action by the user.

In certain embodiments, a dog that is eating the dog food **256** will smell the scented air **252** and thus is highly exposed to the target scent. In general, the scent training device **200** ensures that the closer to the target scent that a dog is, the closer the dog is to the food source as well. Since the source of the scent is also the food source, the scent training device **200** builds a desire and habit in the dog to follow target scents to the source, which is important for detection dogs.

As noted, the specific training examples provided above are merely illustrative. The scent training device in accordance with embodiments presented herein may be modified to train dogs, rats, pigs and/or other animals for target scent identification. Additionally, scent training devices in accordance with embodiments presented herein may have different shapes (e.g., rectangular, square, oval, etc.) and sizes. As such, the invention described and claimed herein is not to be limited in scope by the specific embodiments herein disclosed, since these embodiments are intended as illustrations, and not limitations, of several aspects of the invention. Any equivalent embodiments are intended to be within the scope of this invention. Indeed, various modifications of the invention in addition to those shown and described herein will become apparent to those skilled in the art from the foregoing description. Such modifications are also intended to fall within the scope of the appended claims.

What is claimed is:

1. A scent training device, comprising:

a feeding dish having a bottom surface and at least an outer sidewall defining a trough in which a food item can be disposed, wherein the outer sidewall defines an access opening of the feeding dish;

a base member positioned below the feeding dish to define an internal chamber between the feeding dish and the base member;

an elevated section comprising a substantially vertical surface extending above the trough and including one or more openings extending through the substantially vertical surface from the internal chamber to the feeding dish at a location adjacent the access opening; and

a scent distribution module positioned in the internal chamber configured to force a target scent from the internal chamber through the one or more openings in the substantially vertical surface of the elevated section to create a scent curtain that is directed laterally across the access opening above the food item which can be disposed in the trough.

2. The scent training device of claim **1**, wherein the elevated section comprises a portion of the outer sidewall that is adjacent to the access opening.

3. The scent training device of claim **1**, wherein the feeding dish comprises a raised central member extending from the bottom surface, and wherein the elevated section comprises a portion of the raised central member that is adjacent to the access opening.

4. The scent training device of claim **1**, wherein the scent distribution module comprises:

a scent tray configured to retain a target scent source material therein, wherein the scent tray includes a plurality of apertures extending through one or more surfaces of the scent tray; and

a fan positioned in proximity to the scent tray so as to force air through the scent tray.

5. The scent training device of claim **4**, wherein the base member includes an air intake opening, and wherein the fan is positioned between the air intake opening and the scent tray so as to draw air through the air intake opening and force the air drawn through the air intake opening through the scent tray.

6. The scent training device of claim **4**, further comprising:

a rechargeable power source positioned in the internal cavity to deliver power to the fan.

7. The scent training device of claim **4**, wherein the scent tray is configured to retain the target scent source material therein, wherein the target scent source material is associated with at least one of a narcotic scent, an explosives scent, a chemical and biological agent scent, a currency scent, a foodstuff scent, an insect scent, or a cancer cell scent.

8. The scent training device of claim **1**, further comprising: an alternating current (AC) to direct current (DC) (AC/DC) converter connected to a power cord.

9. The scent training device of claim **1**, wherein the internal chamber is substantially sealed to create a pressure differential between the internal chamber and an outside environment.

10. The scent training device of claim **1**, wherein the base member is detachably secured to the feeding dish.

11. The scent training device of claim **1**, further comprising:

a module configured to wirelessly communicate with a remote control that enables a user to remotely activate the scent distribution module positioned in the internal chamber to force the target scent from the internal chamber through the one or more openings in the elevated section.

12. An apparatus, comprising:

a feeding dish configured to retain a food item therein, wherein the feeding dish defines a trough and an access opening;

a base member positioned to below the feeding dish to define an internal chamber between the feeding dish and the base member;

an elevated section comprising a substantially vertical surface extending above the trough and having one or more openings extending through the substantially vertical surface from the internal chamber to the feeding dish; and

a scent distribution module positioned in the internal chamber, comprising:

a scent tray configured to retain a target scent source material therein, and

a ventilated fan positioned in proximity to the scent tray so as to force air through the scent tray and out of the internal chamber through the one or more openings in the substantially vertical surface of the elevated section in a direction that is substantially parallel to and above contents of the through.

13. The apparatus of claim **12**, wherein the elevated section comprises a portion of an outer sidewall of the feeding dish that is adjacent to the access opening.

14. The apparatus of claim **12**, wherein the feeding dish comprises a raised central member extending from the bottom surface, and wherein the elevated section comprises a portion of the raised central member that is adjacent to the access opening.

15. The apparatus of claim **12**, wherein the base member includes an air intake opening, and wherein the fan is positioned between the air intake opening and the scent tray so as to draw air through the air intake opening and force the air drawn through the air intake opening through the scent tray.

16. The apparatus of claim **12**, further comprising:

a power source positioned in the internal cavity to deliver power to the fan.

17. The apparatus of claim **16**, wherein the power source is a rechargeable battery pack.

18. The apparatus of claim **12**, wherein the internal chamber is substantially sealed to create a pressure differential between the internal chamber and an outside environment.

19. The apparatus of claim **12**, wherein the base member is detachably secured to the feeding dish.

20. The apparatus of claim **12**, further comprising:

a module configured to wirelessly communicate with a remote control that enables a user to remotely activate the scent distribution module positioned in the internal chamber.

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